

Claims

[1] A moving object equipped with ultra-directional speaker, said moving object comprising: a modulator for modulating an ultrasonic carrier signal with an input electric signal from 5 an audible sound signal source; and an emitter for emitting an output signal of said modulator.

[2] The moving object equipped with ultra-directional speaker according to Claim 1, characterized in that said moving object comprises a voice detecting means, a target direction 10 detecting means for detecting a direction of a target to which a voice is to be provided, and an emitter orientation control means for controlling the emitter so that the emitter is oriented toward the target which is identified by said target direction detecting means.

15 [3] The moving object equipped with ultra-directional speaker according to Claim 1, characterized in that the emitter is provided with two or more ultrasonic vibration elements, and an ultrasonic receive sensor or an ultrasonic transmit sensor consists of at least one of said two or more ultrasonic vibration 20 elements.

[4] The moving object equipped with ultra-directional speaker according to Claim 3, characterized in that said moving object comprises a sound level adjustment means for adjusting a level of an output voice from the emitter, and a distance 25 detecting means for transmitting an ultrasonic signal to the target from an ultrasonic vibration element, and for determining a time that has elapsed before receiving a reflection of said ultrasonic signal from said target so as to measure a distance to said target on the basis of the determined 30 time, and characterized in that said sound level adjustment

means adjusts the level of the output voice according to an output of said distance detecting means.

[5] The moving object equipped with ultra-directional speaker according to Claim 4, characterized in that said moving object comprises an automatic gain control means for controlling gain adjustment of the level of the output voice adjusted by the sound level adjustment means according to the output of the distance detecting means.

[6] The moving object equipped with ultra-directional speaker according to Claim 5, characterized in that said moving object comprises a voice recognition and generation means for performing voice recognition on a voice detected by a voice detecting means, and for generating a voice signal which is to be transmitted by the emitter.

[7] A method of controlling an output gain of a moving object equipped with an ultra-directional speaker for transmitting a modulated signal which is obtained by modulating an ultrasonic carrier signal with an audible sound signal, said method comprising the steps of: transmitting an ultrasonic signal to a target by way of said ultra-directional speaker, and then determining a time that has elapsed before receiving a reflection of said ultrasonic signal from said target; estimating a distance to said target on the basis of said determined time; and determining a gain value of said ultra-directional speaker according to said estimated distance so that a voice output of said ultra-directional speaker can be transmitted to said target.

[8] A program that causes a computer to function as a control system for controlling a moving object equipped with an ultra-directional speaker for transmitting a modulated signal

which is obtained by modulating an ultrasonic carrier signal with an audible sound signal, wherein said program causes said computer to function as a sound level adjustment means for adjusting a level of a voice output of said ultra-directional speaker, a distance detecting means for transmitting an ultrasonic signal to a target by way of said ultra-directional speaker, and for determining a time that has elapsed before receiving a reflection of said ultrasonic signal from said target so as to measure a distance to said target on the basis of the determined time; and an automatic gain control means for controlling a gain adjustment of the level of the voice output adjusted by said sound level adjustment means according to an output of said distance detecting means so that the voice output of said ultra-directional speaker can be transmitted to said target.